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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/591,868	09/06/2006	Shouming Wang	6613-76359-01	4672

24197 7590 02/19/2008

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EXAMINER	
HA, JULIE	

ART UNIT	PAPER NUMBER
1654	

MAIL DATE	DELIVERY MODE
02/19/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/591,868	WANG, SHOUMING	
	Examiner	Art Unit	
	Julie Ha	1654	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5,7-22 and 25-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) _____ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *1-5, 7-22 and 25-28* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____is/ are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claims 6 and 23-24 have been cancelled. Claims 1-5, 7-22 and 25-28 are pending in this application.

Election/Restrictions

1. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group 1, claim(s) 1-5, 7 and 15-22, drawn to a compound selected from boronic acids of formula (I) and pharmaceutically acceptable salts, prodrug and pharmaceutically acceptable prodrug salts thereof.

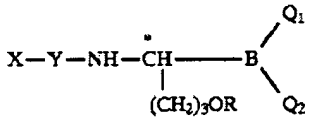
Group 2, claim(s) 8-14, drawn to a compound selected from boronic acids of formula (II) and pharmaceutically acceptable salts, prodrugs and prodrug salts thereof.

Group 3, claim(s) 25, drawn to a medicament comprising a salt, sugar ester or other soluble derivative of a boronic acid which is a selective thrombin inhibitor and has a neutral aminoboronic acid residue.

Group 4, claim(s) 26-27, drawn to a method for making a product of boronic acid of formula (I).

Group 5, claim(s) 28, drawn to a method of inhibiting thrombin in the treatment of a disease, comprising administering to a mammal an effective amount of compound of formula (I).

2. The inventions listed as Groups 1-5 do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: The compounds of formula (I) and formula (II) are patentably independent and distinct due to the variables

of formula (I) and formula (II). Furthermore, due to the lack of common core shared by the compounds of formula (I) and (II), the unity of invention is lacking. Additionally, a medicament comprising a salt, sugar ester or other soluble derivative of a boronic acid which is a selective thrombin inhibitor of Group III is taught by Claeson et al (US Patent No. 5,856,306). Claeson et al teach a pharmaceutical compositions comprising compounds of the formula:  that is useful in therapeutic methods of inhibiting thrombin (see abstract). The reference further teaches that the pharmaceutical compositions may be administered orally or parenterally to a host, and these may be administered alone or in combination with pharmaceutical carrier or diluent (see column 7, lines 52-57).

3. Further, the MPEP states the following: The situation involving the so-called Markush practice wherein a single claim defines alternatives (chemical or non-chemical) is also governed by PCT Rule 13.2. In this special situation, the requirement of a technical interrelationship and the same or corresponding special technical features as defined in PCT Rule 13.2, shall be considered to be met when the alternatives are of a similar nature.

4. When the Markush grouping is for alternatives of chemical compounds, they shall be regarded as being of a similar nature where the following criteria are fulfilled:

(A) All alternatives have a common property or activity; and

(B)

(1) A common structure is present, i.e., a significant structural element is shared by all of the alternatives; or

(B)

(2) In cases where the common structure cannot be the unifying criteria, all alternatives belong to a recognized class of chemical compounds in the art to which the invention pertains.

5. In paragraph (B)(1), above, the words "significant structural element is shared by all of the alternatives" refer to cases where the compounds share a common chemical structure which occupies a large portion of their structures, or in case the compounds have in common only a small portion of their structures, the commonly shared structure constitutes a structurally distinctive portion in view of existing prior art, and the common structure is essential to the common property or activity. The structural element may be a single component or a combination of individual components linked together.

6. In paragraph (B)(2), above, the words "recognized class of chemical compounds" mean that there is an expectation from the knowledge in the art that members of the class will behave in the same way in the context of the claimed invention. In other words, each member could be substituted one for the other, with the expectation that the same intended result would be achieved. The common structural core is limited to NH-CH-B, and there are many different variables that would make the compounds of

formula (I) different from each other; there are many different variables that would make the compounds of formula (II) different from each other.

7. Regarding the method claims, the PCT rule states the following: Unity of invention has to be considered in the first place only in relation to the independent claims in an international application and not the dependent claims. By "dependent" claim is meant a claim which contains all the features of one or more other claims and contains a reference, preferably at the beginning, to the other claim or claims and then states the additional features claimed (PCT Rule 6.4). The examiner should bear in mind that a claim may also contain a reference to another claim even if it is not a dependent claim as defined in PCT Rule 6.4. One example of this is a claim referring to a claim of a different category (for example, "Apparatus for carrying out the process of Claim 1...," or "Process for the manufacture of the product of Claim 1..."). Similarly, a claim to one part referring to another cooperating part, for example, "plug for cooperation with the socket of Claim 1...") is not a dependent claim. Therefore, the method claims lack unity of invention from the product claims.

8. The examiner has required restriction between product and process claims. Where applicant elects claims directed to the product, and the product claims are subsequently found allowable, withdrawn process claims that depend from or otherwise require all the limitations of the allowable product claim will be considered for rejoinder. All claims directed to a nonelected process invention must require all the limitations of an allowable product claim for that process invention to be rejoined.

9. In the event of rejoinder, the requirement for restriction between the product claims and the rejoined process claims will be withdrawn, and the rejoined process claims will be fully examined for patentability in accordance with 37 CFR 1.104. Thus, to be allowable, the rejoined claims must meet all criteria for patentability including the requirements of 35 U.S.C. 101, 102, 103 and 112. Until all claims to the elected product are found allowable, an otherwise proper restriction requirement between product claims and process claims may be maintained. Withdrawn process claims that are not commensurate in scope with an allowable product claim will not be rejoined. See MPEP

§ 821.04(b). Additionally, in order to retain the right to rejoinder in accordance with the above policy, applicant is advised that the process claims should be amended during prosecution to require the limitations of the product claims. **Failure to do so may result in a loss of the right to rejoinder**. Further, note that the prohibition against double patenting rejections of 35 U.S.C. 121 does not apply where the restriction requirement is withdrawn by the examiner before the patent issues. See MPEP § 804.01.

Election of Species

10. This application contains claims directed to more than one species of the generic invention. These species are deemed to lack unity of invention because they are not so linked as to form a single general inventive concept under PCT Rule 13.1.

The species are as follows:

Different compounds of formula (I) or formula (II) due to different variables: aa^1, aa^2, R^9, a, e, b, c, D, E, E^1, E^2, E^3, m, W, d, R^1, s, Z, X, R^6, p;

Different medicament comprising a salt, sugar ester or other soluble derivative of a boronic acid;

Different alkali metal or different strongly basic organic nitrogen-containing compound;

Different diseases.

11. Applicant is required, in reply to this action, to elect a single species to which the claims shall be restricted if no generic claim is finally held to be allowable. The reply must also identify the claims readable on the elected species, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered non-responsive unless accompanied by an election.

12. If an election is made from Group 1, 2, 4 or 5, Applicant is required to elect a single disclosed species of a compound of formula (I) for Groups 1, 4 or 5 or formula (II) for Group 2 wherein all of the variables are elected to arrive at a single disclosed compound. Further, if Group 1, 2 or 4 is elected, Applicant is further required to elect a single disclosed species of alkali metal (such as sodium, potassium, cesium, etc) or organic nitrogen containing compound. If Group 4 is elected, Applicant is further required to elect a single disclosed species of disease (such as for example, myocardial infarction (see paragraph [0325]). If Group 3 is elected, Applicant is required to elect a single boronic acid medicament (compound structure as salt, sugar ester or soluble derivative). For example, Applicant elects Group 2 and elects the boronic acid of formula (VIII).

13. Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

14. The claims are deemed to correspond to the species listed above in the following manner:

Claims 1-5 and 7-20.

The following claim(s) are generic: None.

15. The species listed above do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, the species lack the same or corresponding special technical features for the following reasons: The compounds of formula (I) are patentably independent and distinct from each other because of the different variables within formula (I). There are different amino acid contents and other different variables that make each compound different from each other. The core structure shared is not enough, and therefore, search for one would not necessarily lead to the other, leading to independent searches. The compounds of formula (II) are patentably independent and distinct because of the different variables within formula (II). There are different amino acid contents and other different variables that make each compound different from each other. The core structure shared is not enough, and therefore, search for one would not necessarily lead to the other, leading to independent and searches. The different medicaments and other soluble derivative of a boronic acid that is selective thrombin inhibitor are structurally distinct from each other, because the only thing the claim defines is that the medicament comprises a salt, sugar ester or other soluble derivative of boronic acid and has a neutral aminoboronic acid residue. This can be many different boronic acid derivative or analogs, therefore, may have different amino acid content leading to different structures. Further, search for one would not necessarily lead to the other, leading to independent searches. Different alkali metals are patentably independent and distinct because of the chemical and physical properties of the alkali metal. For example, sodium has a melting point of 97.72°C and potassium has a melting point of 63.38°C. Further, search for one would not necessarily lead to the other. There are many different organic nitrogen-containing compounds. This is a genus, since any compounds containing carbons and nitrogen belong to this genus. Therefore, search for one would not necessarily lead to the other. Different diseases are patentably independent and distinct because they target different organs and cells, and there are different mechanisms of action. For example, an individual suffering from myocardial infarction would not necessarily suffer from pulmonary fibrosis (see paragraph [0347]) and vice versa. Therefore, it would require independent searches.

16. Applicant is advised that the reply to this requirement to be complete must include (i) an election of a species or invention to be examined even though the

requirement be traversed (37 CFR 1.143) and (ii) identification of the claims encompassing the elected invention.

17. The election of an invention or species may be made with or without traverse. To reserve a right to petition, the election must be made with traverse. If the reply does not distinctly and specifically point out supposed errors in the restriction requirement, the election shall be treated as an election without traverse.

18. **Should applicant traverse on the ground that the inventions or species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the inventions or species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C.103(a) of the other invention.**

Conclusion

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julie Ha whose telephone number is 571-272-5982. The examiner can normally be reached on Mon-Fri, 5:30 AM to 3:00 PM.

20. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cecilia Tsang can be reached on 571-272-0562. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

21. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Julie Ha
Patent Examiner

2/14/08
ANISH GUPTA
PRIMARY EXAMINER